

09/873,075

09/873075

~~ CProject

CProjectData Cutinase variant

10038.200-US ____-__-__ ~~~ CProteinSequence H. insolens
cutinase Humicola insolens~* QLGAIENTLE SGSANACPDALILIFARGSTE PGNMGITVGP
ALANGLESHI RNIWIQGVGG 60
PYDAALATNF LPRGTSQANI DEGKRLFALA NQKCPNTPVV AGGYSQGAAL IAAAVSELSS 120
AVKEQVKGVA LFGYTQNLQN RGGIPNYPRE RTKVFCNVGD AVCTGTLIIT PAHLSYTIEA 180
RGEAARFLRD RIRA
194 ARNDBCQEZGHILKMFPSTWYVX PRT ~~~ CCommentF
eature ? N-terminal
extension Artificial/Unknown AAVDSNHTPAVPELVAR ~~~ ARNDBCQEZGHILKMFPSTWYVX
PRT ?
COtherFeature

misc_feature N-terminal extension ~~~

CDNASequence 620AM34 Artificial/Unknown*gagtactatcttgcatcttgtagtagttagtg
aacttgc agctrymkswbdhvn DNA ?

?

misc_feature620AM34

? Dop2-

R Artificial/Unknown gacgccctggatccag agctrymkswbdhvn DNA
?

?

misc_feature Dop2-R

? Dop83-

2 Artificial/UnknownWcggaacatctggatccagggcgctcrstggcccttacrmddmwncdnygncdmbdaacdh
tkyrccgcggggcacctcgcaggccaac agctrymkswbdhvn DNA

?

?

misc_featureDop83-2

?

misc_feature n denotes a, g, c, or t 43 43

?

misc_feature n denotes a, g, c, or t 46 46

?

misc_feature n denotes a, g, c, or t 49 49

?

modified_base See text 63 25

? 680AM35 Artificial/Unknown)atgggttatggatttcggggattcttcgagcgtcccaaaacc
agctrymkswbdhvn DNA ?

?

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NEWS 9 Jun 03 New e-mail delivery for search results now available
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NEWS 12 Jul 02 FOREGE no longer contains STANDARDS file segment
NEWS 13 Jul 22 USAN to be reloaded July 28, 2002;
saved answer sets no longer valid
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NEWS 19 Aug 19 Aquatic Toxicity Information Retrieval (AQUIRE)
now available on STN
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NEWS 21 Aug 19 The MEDLINE file segment of TOXCENTER has been reloaded
NEWS 22 Aug 26 Sequence searching in REGISTRY enhanced
NEWS 23 Sep 03 JAPIO has been reloaded and enhanced
NEWS 24 Sep 16 Experimental properties added to the REGISTRY file
NEWS 25 Sep 16 CA Section Thesaurus available in CAPLUS and CA
NEWS 26 Oct 01 CASREACT Enriched with Reactions from 1907 to 1985
NEWS 27 Oct 21 EVENTLINE has been reloaded
NEWS 28 Oct 24 BEILSTEIN adds new search fields
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NEWS 30 Oct 25 MEDLINE SDI run of October 8, 2002
NEWS 31 Nov 18 DKILIT has been renamed APOLLIT
NEWS 32 Nov 25 More calculated properties added to REGISTRY
NEWS 33 Dec 02 TIBKAT will be removed from STN
NEWS 34 Dec 04 CSA files on STN
NEWS 35 Dec 17 PCTFULL now covers WP/PCT Applications from 1978 to date
NEWS 36 Dec 17 TOXCENTER enhanced with additional content
NEWS 37 Dec 17 Adis Clinical Trials Insight now available on STN
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NEWS 40 Jan 21 NUTRACEUT offering one free connect hour in February 2003
NEWS 41 Jan 21 PHARMAML offering one free connect hour in February 2003
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ENERGY, INSPEC
NEWS 43 Feb 13 CANCERLIT is no longer being updated
NEWS 44 Feb 24 METADEX enhancements
NEWS 45 Feb 24 PCTGEN now available on STN
NEWS 46 Feb 24 TEMA now available on STN
NEWS 47 Feb 26 NTIS now allows simultaneous left and right truncation
NEWS 48 Feb 26 PCTFULL now contains images
NEWS 49 Mar 04 SDI PACKAGE for monthly delivery of multifile SDI results

NEWS EXPRESS January 6 CURRENT WINDOWS VERSION IS V6.01a,
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FILE COVERS 1907 - 6 Mar 2003 VOL 138 ISS 10
 FILE LAST UPDATED: 5 Mar 2003 (20030305/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s koeller, ?/au
 L1 285 KOELLER, ?/AU

=> s yao, ?/au
 L2 20834 YAO, ?/AU

=> s l1 and l2
 L3 1 L1 AND L2

=> d

L3 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2003 ACS
 AN 1995:464191 CAPLUS
 DN 122:260765
 TI Diversity of cutinases from plant pathogenic fungi: different cutinases are expressed during saprophytic and pathogenic stages of Alternaria

brassicicola
 AU Yao, Chenglin; Koeller, William
 CS Department Plant Pathology, Cornell University, Geneva, NY, 14456, USA
 SO Molecular Plant-Microbe Interactions (1995), 8(1), 122-30
 CODEN: MPMIEL; ISSN: 0894-0282
 PB American Phytopathological Society
 DT Journal
 LA English

=> s alernaria
 L4 6 ALERNARIA

=> d 1-6

L4 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 2000:859224 CAPLUS
 DN 134:292860
 TI Constitutive hydrolytic enzymes are associated with polygenic resistance of tomato to Alternaria solani and may function as an elicitor release mechanism
 AU Lawrence, Christopher B.; Singh, Narendra P.; Qiu, Jianseng; Gardner, Randolph G.; Tuzun, Sadik
 CS Department of Plant Pathology, Auburn University, Auburn, AL, 36849-5409, USA
 SO Physiological and Molecular Plant Pathology (2000), 57(5), 211-220
 CODEN: PMPPEZ; ISSN: 0885-5765
 PB Academic Press
 DT Journal
 LA English
 RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 1993:212692 CAPLUS
 DN 118:212692
 TI New derivatives of 2-methylenebutanedioic acid, useful as fungicides, and method of their preparation
 IN Veverka, Miroslav
 PA Czech.
 SO Czech., 7 pp.
 CODEN: CZXXA9
 DT Patent
 LA Slovak

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CS 274008	B1	19910411	CS 1988-4496	19880627
PRAI	CS 1988-4496		19880627		
OS	MARPAT 118:212692				

L4 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 1992:190795 CAPLUS
 DN 116:190795
 TI Biosynthesis of alterporriol A by Alternaria porri
 AU Ohnishi, Keiichiro; Tanabe, Hirosuke; Hayashi, Satoshi; Suemitsu, Rikisaku
 CS Fac. Eng., Doshisha Univ., Kyoto, 602, Japan
 SO Bioscience, Biotechnology, and Biochemistry (1992), 56(1), 42-3
 CODEN: BBBIEJ; ISSN: 0916-8451
 DT Journal
 LA English

L4 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 1978:439146 CAPLUS
 DN 89:39146
 TI Indoleacetic acid synthesis and virulence of two races of Alternaria macrospora Zimm
 AU Bhaskaran, R.
 CS Dep. Plant Pathol., Tamil Nadu Agric. Univ., Coimbatore, India

SO Indian Journal of Farm Sciences (1975), 3, 106-7
 CODEN: IJFSBT; ISSN: 0253-712X
 DT Journal
 LA English

L4 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 1974:26094 CAPLUS
 DN 80:26094
 TI Black tea liquor
 IN Tomikanahara, Takashi; Motoda, Setsuji; Shibata, Ariyasu
 PA Institute of Physical and Chemical Research
 SO Jpn. Tokkyo Koho, 5 pp.
 CODEN: JAXXAD

DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 48016636	B4	19730523	JP 1969-30609	19690419
PRAI	JP 1969-30609		19690419		

L4 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2003 ACS
 AN 1965:439025 CAPLUS
 DN 63:39025
 OREF 63:6977b-g
 TI Pyrrole derivatives
 PA Societa Farmaceutici Italia
 SO 8 pp.
 DT Patent
 LA Unavailable
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	NL 64008458		19650127	NL	
PRAI	IT		19630726		

=> dis his

(FILE 'HOME' ENTERED AT 12:12:16 ON 06 MAR 2003)

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L1 285 S KOELLER, ?/AU
 L2 20834 S YAO, ?/AU
 L3 1 S L1 AND L2
 L4 6 S ALERNARIA

=> log h

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NEWS	17	Aug 08	PHARMAMarketLetter(PHARMAML) - new on STN
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NEWS	23	Sep 03	JAPIO has been reloaded and enhanced
NEWS	24	Sep 16	Experimental properties added to the REGISTRY file
NEWS	25	Sep 16	CA Section Thesaurus available in CAPLUS and CA
NEWS	26	Oct 01	CASREACT Enriched with Reactions from 1907 to 1985
NEWS	27	Oct 21	EVENTLINE has been reloaded
NEWS	28	Oct 24	BEILSTEIN adds new search fields
NEWS	29	Oct 24	Nutraceuticals International (NUTRACEUT) now available on STN
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NEWS	31	Nov 18	DKILIT has been renamed APOLLIT
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NEWS	43	Feb 13	CANCERLIT is no longer being updated
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NEWS	48	Feb 26	PCTFULL now contains images
NEWS	49	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results

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=> s cutinase (10a) (variant or mutat?)

L1 131 CUTINASE (10A) (VARIANT OR MUTAT?)

=> s l1 and (thermo? or temperat?)

10 FILES SEARCHED...

L2 48 L1 AND (THERMO? OR TEMPERAT?)

=> s l1 and fung?

L3 57 L1 AND FUNG?

=> s l2 and l3

L4 22 L2 AND L3

=> dup rem l4

PROCESSING COMPLETED FOR L4

L5 14 DUP REM L4 (8 DUPLICATES REMOVED)

=> d 1-14

L5 ANSWER 1 OF 14 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI

AN 2002-12006 BIOTECHDS

TI Variant of parent Termamyl-like alpha amylase, useful in detergent compositions, for starch liquefaction, ethanol production, washing and/or dish washing, and textile desizing;
recombinant enzyme production, vector expression in host cell, polymerase chain reaction and mutagenesis

AU THISTED T; KJAERULFF S; ANDERSEN C; FUGLSANG C C

PA NOVOZYMES AS

PI WO 2002010355 7 Feb 2002

AI WO 2000-DK488 1 Aug 2000

PRAI DK 2001-655 26 Apr 2001

DT Patent

LA English

OS WPI: 2002-280633 [32]

L5 ANSWER 2 OF 14 WPIDS (C) 2003 THOMSON DERWENT

AN 2002-280633 [32] WPIDS

DNC C2002-082551

TI Variant of parent Termamyl-like alpha amylase, useful in detergent compositions, for starch liquefaction, ethanol production, washing and/or dish washing, and textile desizing.

DC B04 D13 D16 D25 E17 F06

IN ANDERSEN, C; FUGLSANG, C C; KJAERULFF, S; THISTED, T

PA (NOVO) NOVOZYMES AS

CYC 96

PI WO 2002010355 A2 20020207 (200232)* EN 90p C12N009-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ

NL OA PT SD SE SL SZ TR TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK

DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR

KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU

SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2001078415 A 20020213 (200238) C12N009-00

US 2002155574 A1 20021024 (200273) C12N009-28

ADT WO 2002010355 A2 WO 2001-DK488 20010712; AU 2001078415 A AU 2001-78415

20010712; US 2002155574 A1 Provisional US 2000-225140P 20000814,

Provisional US 2000-233986P 20000920, Provisional US 2000-249104P

20001116, Provisional US 2001-286869P 20010426, US 2001-918543 20010731

FDT AU 2001078415 A Based on WO 200210355

PRAI DK 2001-655 20010426; DK 2000-1160 20000801; DK 2000-1354

20000912; DK 2000-1687 20001110

IC ICM C12N009-00; C12N009-28

ICS C12N005-06; C12N009-30; C12P021-02

L5 ANSWER 3 OF 14 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.

AN 2002:234659 BIOSIS

DN PREV200200234659

TI Cutinase-peptide fusions in **thermoseparating** aqueous two-phase systems. Prediction of partitioning and enhanced tag efficiency by detergent addition.

AU Nilsson, Anna; Mannesse, Maurice; Egmond, Maarten R.; Tjerneld, Folke (1)

CS (1) Department of Biochemistry, Lund University, S-221 00, Lund, Sweden
folke.tjerneld@biokem.lu.se
SO Journal of Chromatography A, (8 February, 2002) Vol. 946, No. 1-2, pp.
141-155. <http://www.elsevier.nl/inca/publications/store/5/0/2/6/8/8/index.htm>.
ISSN: 0021-9673.
DT Article
LA English

L5 ANSWER 4 OF 14 SCISEARCH COPYRIGHT 2003 ISI (R) DUPLICATE 1
AN 2002:978831 SCISEARCH
GA The Genuine Article (R) Number: 619QG
TI Studies on ferulic acid esterase activity in **fungi** lipases and
cutinases
AU Andersen A (Reprint); Svendsen A; Vind J; Lassen S F; Hjort C; Borch K;
Patkar S A
CS Novozymes AS, Dept Prot Chem, DK-2880 Bagsvaerd, Denmark
CYA Denmark
SO COLLOIDS AND SURFACES B-BIOINTERFACES, (SEP 2002) Vol. 26, No. 1-2, pp.
47-55.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM,
NETHERLANDS.
ISSN: 0927-7765.
DT Article; Journal
LA English
REC Reference Count: 38
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L5 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 2
AN 2001:886490 HCAPLUS
DN 136:33925
TI **Cutinase variants** with improved
thermostability and their use in textile treatments
IN Svendsen, Allan; Glad, Sanne O. S.; Fukuyama, Shiro; Matsui, Tomoko
PA Novozymes A/s, Den.
SO PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001092502	A1	20011206	WO 2001-DK350	20010522
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,				
	HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,				
	LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,				
	RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN,				
	YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,				
	DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,				
	BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
PRAI	DK 2000-861	A	20000602		
	DK 2000-1577	A	20001023		
	DK 2000-1772	A	20001124		
	DK 2001-100	A	20010119		

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 14 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 2001:313694 BIOSIS
DN PREV200100313694
TI Engineering the pH-optimum of a triglyceride lipase: From predictions
based on electrostatic computations to experimental results.
AU Neves-Petersen, Maria Teresa; Petersen, Evamaria I.; Fojan, Peter;
Noronha, Melinda; Madsen, Rune G.; Petersen, Steffen B. (1)
CS (1) Biostructure and Protein Engineering Group, Department of Life
Sciences, Aalborg University, Sohngaardsholmsvej 49, DK-9000, Aalborg;
steffen.petersen@bio.auc.dk, www.protein.auc.dk Denmark

-This
application

SO Journal of Biotechnology, (May, 2001) Vol. 87, No. 3, pp. 25-254.
print.
ISSN: 0168-1656.
DT Article
LA English
SL English

L5 ANSWER 7 OF 14 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE
3

AN 2001:473058 BIOSIS

DN PREV200100473058

TI DSC studies of Fusarium solani pisi cutinase: Consequences for stability
in the presence of surfactants.

AU Creveld, Lucia D.; Meijberg, Wim; Berendsen, Herman J. C.; Pepermans,
Henri A. M. (1)

CS (1) Unilever Research, Olivier van Noortlaan 120, 3133 AT, Vlaardingen:
rik.pepermans@unilever.com Netherlands

SO Biophysical Chemistry, (30 August, 2001) Vol. 92, No. 1-2, pp. 65-75.
print.

ISSN: 0301-4622.

DT Article

LA English

SL English

L5 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 4

AN 2000:401975 HCAPLUS

DN 133:39881

TI **Cutinase variants** with improved
thermostability and their use in textile treatments

IN Abo, Masanobu; Fukuyama, Shiro; Svendsen, Allan; Matsui, Tomoko

PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 79 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000034450	A1	20000615	WO 1999-DK678	19991203
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	BR 9915832	A	20010821	BR 1999-15832	19991203
	EP 1137761	A1	20011004	EP 1999-957265	19991203
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
PRAI	DK 1998-1604	A	19981204		
	US 1998-111591P	P	19981209		
	DK 1999-330	A	19990309		
	US 1999-124671P	P	19990316		
	WO 1999-DK678	W	19991203		

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 9 OF 14 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI

AN 2000-12956 BIOTECHDS

TI **Thermostable variant** of parent **funga**

cutinase useful for dyeing polyester yarn or fabric, comprises
substitution of amino acid residues at predetermined positions from the
N-terminal amino acid;

method is useful improving the functional finish of a polymer of
ethyleneglycol and terephthalic acid

AU Abo M; Fukuyama S; Svendsen A; Matsui T

PA Novo-Nordisk
LO Bagsvaerd, Denmark.
PI WO 2000034450 15 Jun 2000
AI WO 1999-DK678 3 Dec 1999
PRAI US 1999-124671 16 Mar 1999; DK 1998-1604 4 Dec 1998
DT Patent
LA English
OS WPI: 2000-482424 [42]

L5 ANSWER 10 OF 14 MEDLINE DUPLICATE 5
AN 2001326906 MEDLINE
DN 21287777 PubMed ID: 11394565
TI Extraction of peptide tagged cutinase in detergent-based aqueous two-phase systems.
AU Rodenbrock A; Selber K; Egmond M R; Kula M R
CS Institute of Enzyme Technology, Heinrich-Heine University, Julich, Germany.
SO BIOSEPARATION, (2000) 9 (5) 269-76.
Journal code: 9011423. ISSN: 0923-179X.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200110
ED Entered STN: 20011015
Last Updated on STN: 20011015
Entered Medline: 20011011

L5 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:257475 HCAPLUS
DN 126:234442
TI An in vivo recombination method for increased efficiency of preparation of active variants of proteins
IN Okkels, Jens Sigurd
PA Novo Nordisk A/s, Den.; Okkels, Jens Sigurd
SO PCT Int. Appl., 65 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN. CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9707206	A1	19970227	WO 1996-DK344	19960812
	W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA			
	AU 9666554	A1	19970312	AU 1996-66554	19960812
	CN 1192782	A	19980909	CN 1996-196213	19960812
	EP 1213350	A2	20020612	EP 2002-2150	19960812
	EP 1213350	A3	20021204		
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI			
PRAI	DK 1995-907	A	19950811		
	DK 1995-1047	A	19950920		
	EP 1996-926325	A3	19960812		
	WO 1996-DK344	W	19960812		

L5 ANSWER 12 OF 14 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:259788 HCAPLUS
DN 126:234419
TI Generation of variant polypeptides by in vivo recombination between linear DNAs
IN Okkels, Jens Sigurd
PA Novo Nordisk A/s, Den.; Okkels, Jens Sigurd
SO PCT Int. Appl., 67 pp.
CODEN: PIXXD2

DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9707205	A1	19970227	WO 1996-DK343	19960812
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA				
	AU 9666553	A1	19970312	AU 1996-66553	19960812
	EP 843725	A1	19980527	EP 1996-926325	19960812
	EP 843725	B1	20020417		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
	CN 1192782	A	19980909	CN 1996-196213	19960812
	JP 11510700	T2	19990921	JP 1996-508841	19960812
	AT 216427	E	20020515	AT 1996-926325	19960812
	EP 1213350	A2	20020612	EP 2002-2150	19960812
	EP 1213350	A3	20021204		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
PRAI	DK 1995-907	A	19950811		
	DK 1995-1047	A	19950920		
	EP 1996-926325	A3	19960812		
	WO 1996-DK343	W	19960812		

L5 ANSWER 13 OF 14 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:240584 HCAPLUS

DN 126:222277

TI Recombinant lipases with C- and/or N-terminal extensions and their use in detergents

IN Fuglsang, Claus Crone; Okkels, Jens Sigurd; Petersen, Dorte Aaby; Patkar, Shamkant Anant; Thellersen, Marianne; Vind, Jesper; Halkier, Torben; Joergensen, Steen Troels; et al.

PA Novo Nordisk A/s, Den.; Fuglsang, Claus Crone; Okkels, Jens Sigurd; Petersen, Dorte Aaby; Patkar, Shamkant Anant; Thellersen, Marianne; Vind, Jesper; Halkier, Torben

SO PCT Int. Appl., 191 pp.
CODEN: PIXXD2

DT Patent
LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9704079	A1	19970206	WO 1996-DK322	19960712
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA				
	AU 9664141	A1	19970218	AU 1996-64141	19960712
	EP 839186	A1	19980506	EP 1996-923878	19960712
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	CN 1193346	A	19980916	CN 1996-196371	19960712
	JP 2001526523	T2	20011218	JP 1997-506185	19960712
	US 6495357	B1	20021217	US 1998-7288	19980114
PRAI	DK 1995-832	A	19950714		
	DK 1995-1013	A	19950913		
	DK 1995-1096	A	19950929		
	DK 1995-1306	A	19951121		
	US 1996-11634P	P	19960214		
	DK 1996-372	A	19960401		
	US 1996-20461P	P	19960507		
	DK 1995-905	A	19950811		
	US 1996-11627P	P	19960214		
	DK 1996-374	A	19960401		

US 1996-16754P P 19960712
 WO 1996-DK322 W 19960712
 WO 1996-DK341 A2 19960812

L5 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2003 ACS
 AN 1997:220628 HCAPLUS
 DN 126:208956
 TI Recombinant lipases with C- and/or N-terminal extensions and their use in
 detergents
 IN Fuglsang, Claus Crone; Okkels, Jens Sigurd; Pertersen, Dorte Aaby; Patkar,
 Shamkant Anant; Thellersen, Marianne; Vind, Jesper; Halkier, Torben;
 Joergensen, Steen Troels; et al.
 PA Novo Nordisk A/s, Den.; Fuglsang, Claus Crone; Okkels, Jens Sigurd;
 Pertersen, Dorte Aaby; Patkar, Shamkant Anant; Thellersen, Marianne; Vind,
 Jesper; Halkier, Torben
 SO PCT Int. Appl., 197 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9704078	A1	19970206	WO 1996-DK321	19960712
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA				
	AU 9664140	A1	19970218	AU 1996-64140	19960712
	CN 1193346	A	19980916	CN 1996-196371	19960712
PRAI	DK 1995-832	A	19950714		
	DK 1995-1013	A	19950913		
	DK 1995-1096	A	19950929		
	DK 1995-1306	A	19951121		
	US 1996-11634P	P	19960214		
	DK 1996-372	A	19960401		
	US 1996-20461P	P	19960507		
	WO 1996-DK321	W	19960712		

=> d 1, 8, 9 ab

L5 ANSWER 1 OF 14 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
 AB DERWENT ABSTRACT:
 NOVELTY - A variant (I) of a parent Termamyl-like alpha-amylase,
 comprising an alteration at one or more positions (P), having
 alpha-amylase activity, is new.
 DETAILED DESCRIPTION - (P) includes positions 49, 60, 104, 132, 161,
 170, 176, 180, 181, 183, 200, 203, 204, 207, 212, 237, 239, 250, 280,
 298, 318, 374, 385, 393, 402, 406, 427, 430, 440, 447 or 482. The
 alteration(s) are independently selected from an insertion at downstream
 position of the amino acid at (P), deletion of an amino acid at (P) or
 substitution of an amino acid at (P) with other amino acid, where each
 position corresponds to a position of the amino acid sequence of the
 parent Termamyl-like alpha-amylase comprising a sequence (S1) of 483
 amino acids fully defined in the specification. INDEPENDENT CLAIMS are
 also included for the following: (1) a DNA construct (II) comprising a
 DNA sequence encoding (I); (2) a recombinant expression vector (III)
 comprising (II); (3) a cell (IV) which is transformed with (II) or (III);
 (4) a composition (C) comprising (I); and (5) a detergent composition
 (DC) comprising (I).
 BIOTECHNOLOGY - Preferred Variant: (I) has one or more of the
 mutations given in the specification using S1 for the numbering. The
 parent Termamyl-like alpha-amylase is derived from a strain of Bacillus
 licheniformis (S1), B.amyloliquefaciens (comprising a sequence of 483
 amino acids fully defined in the specification) and B.stearothermophilus
 (comprising a sequence of 515 amino acids fully defined in the
 specification). The parent Termamyl-like alpha-amylase is selected from

SP690, SP722, AA560, 707 and alpha-amylase and KSM-AP1378 (all sequences comprising 485 amino acids fully defined in the specification). The parent alpha-amylase has at least 60%, preferably 90% identity to S1, and is encoded by a nucleic acid sequence which hybridizes under low, medium or high stringency conditions with a nucleic acid sequence comprising 1920 nucleotides fully defined in the specification. Preferred Cell: (IV) is a microorganism such as bacterium or **fungus**. The bacterium is *B.subtilis*, *B.licheniformis*, *B.lentus*, *B.brevis*, *B.stearothermophilus*, *B.alkalophilus*, *B.amyloliquefaciens*, *B.coagulans*, *B.circulans*, *B.lautus* or *B.thuringiensis*. Preferred Composition: (C) further comprises *B.stearothermophilus* (BSG) alpha-amylase in particular SP961, in a ratio of 1:10-10:1, preferably 1:2. (C) further comprises a glycoamylase, pullulanase and/or a phytase. DC further comprises protease, lipase, peroxidase, amylolytic enzyme glucoamylase, maltogenic amylase, CGTase, mannanase, **cutinase**, laccase and/or a cellulase. Preparation: The **variant** is prepared by standard genetic recombinant techniques.

USE - (I) is used for starch liquefaction, ethanol production, washing and/or dish washing, and textile desizing (claimed).

ADVANTAGE - (I) has altered stability in particular at high **temperatures** from 70-120degreesC and/or low pH in the range from pH 4.0-6.0.

EXAMPLE - To improve the stability at low pH and low calcium concentration of the parent *Bacillus licheniformis* alpha-amylase, error-prone polymerase chain reaction (PCR) mutagenesis was performed. The plasmid pDN1528 encoding wild-type *B.licheniformis* alpha-amylase gene was utilized as template to amplify the gene with primers, 22149 (5'-CGATTGCTGACGCTGTTATTTGCG-3') and 2814 (5'-GATCACCCGCGATACCGTC-3') under PCR conditions where increased error rates leadsto introduction of random point mutations. The resultant PCR fragment was purified on gel and used in a PCR-based multimerization step with a gel purified vector fragment created by PCR amplification of pDN1528 with primers 24 (5'-GAATGTATGTGCGCCGGCAAACGCCGGTGA-3') and 27 (5'-GCCGCCGCTGCTGCAGAATGAGGCAGCAAG-3') forming an overlap to the insert fragment. The multimerization reaction was subsequently introduced into *B.subtilis*. The error-prone library was screened in the low pH filter assay. Clones testing positive upon rescreening was submitted to secondary screening for stability in the liquid assay. (90 pages)

L5 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 4

AB **Variants of fungal cutinases** have improved **thermostability**. The variants comprise substitution of one or more amino acid residues near the N-terminal in the amino acid sequence or in the three-dimensional structure of the cutinase. Thus, substitution mutants of *Humicola insolens* cutinase were prepd. These mutants displayed enhanced **thermostability**. The enzymes were used for removal of cyclic polyethyleneterephthalate from textiles, for textile dyeing, and for redn. of malodors on textiles.

L5 ANSWER 9 OF 14 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI

AB A new **thermostable variant** (I) of a parent **fungal-cutinase** is claimed. (I) contains substitutions of one or more amino acid residues at a position (p) located within 17 angstrom or within 20 positions from the N-terminal amino acid. Also claimed are: a DNA sequence (II) encoding (I); a vector (III) containing (II); a transformed host cell harboring (II) or (III); a method for the preparation/construction of (I); a surfactant composition containing a surfactant and (I); and detecting cutinase activity in a sample, by incubating the sample with terephthalic acid bis(2-hydroxyethyl)ester dibenzoate and detecting hydrolysis of the ester. (I) is useful for dyeing polyester fabric or yarn. The method involves enzymatic hydrolysis at 65-75 deg, of a cyclic oligomer, e.g. cyclic tri(ethylene terephthalate) of poly(ethylene terephthalate) present in and on the fiber of polyester containing fabric or yarn. (I) is also useful for improving the functional finish of a polymer of ethyleneglycol and terephthalic acid containing yarn or fabric. (I) is useful in surfactant to improve the removal of fatty soiling and in baking industries, and paper making industries. (79pp)

=> dis his

(FILE 'HOME' ENTERED AT 19:58:59 ON 04 MAR 2003)

FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS, ESBIODBASE, BIOTECHNO, WPIDS' ENTERED AT 19:59:06 ON 04 MAR 2003

L1 131 S CUTINASE (10A) (VARIANT OR MUTAT?)
L2 48 S L1 AND (THERMO? OR TEMPERAT?)
L3 57 S L1 AND FUNG?
L4 22 S L2 AND L3
L5 14 DUP REM L4 (8 DUPLICATES REMOVED)

=> s l3 not l4

L6 35 L3 NOT L4

=> dup rem l6

PROCESSING COMPLETED FOR L6

L7 24 DUP REM L6 (11 DUPLICATES REMOVED)

=> d 1-10

L7 ANSWER 1 OF 24 HCAPLUS COPYRIGHT 2003 ACS

AN 2003:58203 HCAPLUS

DN 138:133154

TI Subtilase variants with improved stability, catalytic activity or wash performance for use in detergents

IN Fano, Tina Sejersgard; Von der Osten, Claus; Krueger, Malene Kappen; Norregaard-Madsen, Mads

PA Novozymes A/S, Den.

SO PCT Int. Appl., 66 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003006602	A2	20030123	WO 2002-DK485	20020711
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRAI DK 2001-1090 A 20010712

L7 ANSWER 2 OF 24 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:293829 HCAPLUS

DN 136:321289

TI Subtilase variants with decreased sensitivity to trypsin inhibitors present in egg stains

IN Norregaard-Madsen, Mads; Larsen, Line Bloch; Hansen, Peter Kamp

PA Novozymes A/S, Den.

SO PCT Int. Appl., 93 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002031133	A1	20020418	WO 2001-DK667	20011012
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,			

LS, LT, LU, LV, MA, MG, MK, MN, MW, MX, MZ, NO, PH, PL,
 PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002010379 A5 20020422 AU 2002-10379 20011012
 US 2002155575 A1 20021024 US 2001-976414 20011012
 PRAI DK 2000-1528 A 20001013
 US 2000-241201P P 20001017
 WO 2001-DK667 W 20011012
 RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 3 OF 24 HCAPLUS COPYRIGHT 2003 ACS
 AN 2001:453240 HCAPLUS
 DN 135:62103
 TI Subtilase variants having an improved wash performance on egg stains
 IN Fano, Tina Sejersgaard; Mikkelsen, Frank F.
 PA Novozymes A/S, Den.
 SO PCT Int. Appl., 137 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001044452	A1	20010621	WO 2000-DK660	20001201
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1244779	A1	20021002	EP 2000-979461	20001201
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI DK 1999-1792	A	19991215		
DK 2000-708	A	20000501		
DK 2000-1527	A	20001013		
WO 2000-DK660	W	20001201		

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 4 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
 AN 2001-06778 BIOTECHDS
 TI Engineering the pH optimum of a triglyceride lipase: from predictions
 based on electrostatic computations to experimental results;
 Fusarium solani pisi cutinase enzyme engineering
 AU Neves-Petersen M T; Petersen E I; Fojan P; Moronha M; Madsen R G;
 *Petersen S B
 CS Univ.Aalborg; Inst.Super.Tech.Lisbon; Univ.Lisbon-Tech.
 LO The Biostructure and Protein Engineering Group, Department of Life
 Sciences, Aalborg University, Sohngaardsholmsvej 49, DK-9000 Aalborg,
 Denmark.
 Email: steffen.petersen@bio.auc.dk
 SO J.Biotechnol.; (2001) 87, 3, 225-54
 CODEN: JBITD4 ISSN: 0168-1656
 DT Journal
 LA English

L7 ANSWER 5 OF 24 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:441898 HCAPLUS
 DN 133:86106
 TI Variants of I-S1 and I-S2 sub-groups of subtilisin having an additional
 amino acid residue in the active site loop region showing greatly improved

wash performance
IN Andersen, Vilbourn Kim; Mikkelsen, Frank; Hansen, Kamp Peter; Andersen,
Carsten; Norregaard-Madsen, Mads
PA Novo Nordisk A/S, Den.
SO PCT Int. Appl., 72 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000037599	A1	20000629	WO 1999-DK714	19991220
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG CA 2355580 AA 20000629 CA 1999-2355580 19991220 BR 9916351 A 20010918 BR 1999-16351 19991220 EP 1141205 A1 20011010 EP 1999-960944 19991220 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO JP 2002533066 T2 20021008 JP 2000-589656 19991220 PRAI DK 1998-1674 A 19981218 WO 1999-DK714 W 19991220				

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 6 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
AN 2001-13245 BIOTECHDS
TI Fusarium solani pisi cutinase;
enzyme characterization; a review
AU Egmond M R; de Vlieg J
CS Unilever
LO Unilever Research Laboratory, Olivier van Noortlaan 120, 3133 AT
Vlaardingen, The Netherlands.
Email: maarten.egremond@unilever.com
SO Biochimie; (2000) 82, 11, 1015-21
CODEN: BICMBE ISSN: 0300-9084
DT Journal
LA English

L7 ANSWER 7 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
AN 2000-07601 BIOTECHDS
TI Genetic engineering of the Fusarium solani pisi lipase cutinase for
enhanced partitioning in PEG-phosphate aqueous two-phase systems;
including the construction of seven different **cutinase**
lipase **variants** containing various C-terminal peptide
extensions
AU Bandmann N; Collet E; Leijen J; Uhlen M; Veide A; *Nygren P A
CS Roy.Inst.Technol.Stockholm
LO Department of Biotechnology, Royal Institute of Technology (KTH),
Teknikringen 30, SE-100 44 Stockholm, Sweden.
Email: perake@biochem.kth.se
SO J.Biotechnol.; (2000) 79, 2, 161-72
CODEN: JBITD4 ISSN: 0168-1656
DT Journal
LA English

L7 ANSWER 8 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:189188 HCAPLUS
DN 130:219878
TI Protease variants and compositions for use in detergents
IN Hansen, Peter Kamp; Bauditz, Peter; Mikkelsen, Frank; Andersen, Kim
Vilbourn

PA Novo Nordisk A/S, Den.
SO PCT Int. Appl., 70 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9911770	A1	19990311	WO 1998-DK361	19980819
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	CA 2301785	AA	19990311	CA 1998-2301785	19980819
	AU 9890618	A1	19990322	AU 1998-90618	19980819
	EP 1007646	A1	20000614	EP 1998-942501	19980819
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI			
	BR 9811396	A	20000822	BR 1998-11396	19980819
	JP 2001514847	T2	20010918	JP 2000-508781	19980819
PRAI	DK 1997-988	A	19970829		
	WO 1998-DK361	W	19980819		

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 9 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:189187 HCAPLUS
DN 130:206698
TI Protease variants and compositions for use in detergents
IN Hansen, Peter Kamp; Bauditz, Peter; Mikkelsen, Frank; Andersen, Kim
Vilbour

PA Novo Nordisk A/S, Den.
SO PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9911769	A1	19990311	WO 1998-DK360	19980819
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	CA 2301767	AA	19990311	CA 1998-2301767	19980819
	AU 9890617	A1	19990322	AU 1998-90617	19980819
	EP 1012251	A1	20000628	EP 1998-942500	19980819
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI			
	BR 9811412	A	20000822	BR 1998-11412	19980819
	JP 2001514846	T2	20010918	JP 2000-508780	19980819
PRAI	DK 1997-987	A	19970829		
	WO 1998-DK360	W	19980819		

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 10 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:189186 HCAPLUS
DN 130:206697
TI Protease variants and compositions for use in detergents
IN Hansen, Peter Kamp; Bauditz, Peter; Mitkkelsen, Frank; Andersen, Kim
Vilbour
PA Novo Nordisk A/S, Den.

SO PCT Int. Appl., 67 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9911768	A1	19990311	WO 1998-DK359	19980819
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	CA 2301851	AA	19990311	CA 1998-2301851	19980819
	AU 9887981	A1	19990322	AU 1998-87981	19980819
	EP 1009815	A1	20000621	EP 1998-939486	19980819
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI			
	JP 2002515221	T2	20020528	JP 2000-508779	19980819
PRAI	DK 1997-986	A	19970829		
	WO 1998-DK359	W	19980819		
RE.CNT 3	THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT				

=> d 6 ab

L7 ANSWER 6 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
AB Cutinase from *Fusarium solani* pisi was characterized in detail with respect to its structural and functional properties. The crystal structure of the enzyme was solved to high atomic resolution 1 Angstrom, while data n structural dynamics were obtained from detailed NMR studies. Functional data were mainly derived from kinetic studies using substrate analogs that simplify the kinetic behavior. The properties of wild-type cutinase are reviewed and discussed with respect to the effects brought about by site-directed **variants** of the enzyme.
Cutinase is an interesting enzyme that can be applied in a wide variety of systems ranging from surfactants to food and chemical industries. By enzyme engineering several of its drawbacks can be removed without affecting the desired traits of this versatile enzyme. (30 ref)

=> FIL STNGUIDE

COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
64.21	64.42

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE	TOTAL
ENTRY	SESSION
-0.65	-0.65

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FILE CONTAINS CURRENT INFORMATION.

LAST RELOADED: Feb 28, 2003 (20030228/UP).

=> d 11-24

YOU HAVE REQUESTED DATA FROM FILE 'MEDLINE, BIOTECHDS, BIOSIS, HCAPLUS' - CONTINUE? (Y)/N:y

L7 ANSWER 11 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:48790 HCAPLUS
DN 130:106943

TI Variants of Humicola family endo-1,4-.beta.-glucanases CelA and CelB and
 their use in cleaning compositions
 IN Lund, Henrik; Nielsen, Jack Bech; Schulein, Martin; Damgaard, Bo;
 Andersen, Kim Vilbour
 PA Novo Nordisk A/S, Den.
 SO PCT Int. Appl., 271 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9901544	A1	19990114	WO 1998-DK299	19980702
	W:				
	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,				
	DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE,				
	KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW,				
	MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,				
	TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,				
	FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,				
	CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9879088	A1	19990125	AU 1998-79088	19980702
	EP 1002061	A1	20000524	EP 1998-929249	19980702
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
PRAI	DK 1997-813		19970704		
	WO 1998-DK299		19980702		

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 12 OF 24 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
 AN 1999:203606 BIOSIS
 DN PREV199900203606
 TI Interfacial binding of cutinase rather than its catalytic activity
 determines the steady state interfacial tension during oil drop lipid
 hydrolysis.
 AU Flipsen, J. A. C.; van Schaick, M. A.; Dijkman, R.; van der Hijden, H. T.
 W. M.; Verheij, H. M.; Egmond, M. R. (1)
 CS (1) Unilever Research Vlaardingen, 3130 AC, Vlaardingen Netherlands
 SO Chemistry and Physics of Lipids, (March, 1999) Vol. 97, No. 2, pp.
 181-191.
 ISSN: 0009-3084.
 DT Article
 LA English
 SL English

L7 ANSWER 13 OF 24 HCAPLUS COPYRIGHT 2003 ACS
 AN 1998:324873 HCAPLUS
 DN 129:2165
 TI Subtilase variants with modified autoproteolytic stability for use in
 detergents
 IN Von der Osten, Claus; Halkier, Torben; Andersen, Carsten; Bauditz, Peter;
 Hansen, Peter Kamp
 PA Novo Nordisk A/S, Den.
 SO PCT Int. Appl., 100 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9820116	A1	19980514	WO 1997-DK500	19971104
	W:				
	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,				
	DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR,				
	KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,				
	PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG,				
	UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR,				
	GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA,				
	GN, ML, MR, NE, SN, TD, TG				

AU 9747731	A1	19970529	AU 1997-47731	19971031
EP 932667	A1	19991004	EP 1997-910275	19971104
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
CN 1235637	A	19991117	CN 1997-199372	19971104
BR 9712878	A	20000201	BR 1997-12878	19971104
JP 2001503269	T2	20010313	JP 1998-520961	19971104
US 6300116	B1	20011009	US 1997-963851	19971104
KR 2000053071	A	20000825	KR 1999-703986	19990504
US 2002102702	A1	20020801	US 2001-948080	20010906
PRAI DK 1996-1235	A	19961104		
DK 1996-1240	A	19961105		
DK 1997-284	A	19970314		
US 1997-963851	A3	19971104		
WO 1997-DK500	W	19971104		

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 14 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1998:324872 HCAPLUS
DN 129:2164
TI Subtilase variants at amino acid positions Tyr-167 and Arg-170 for improved was performance in detergents
IN Hansen, Peter Kamp; Von der Osten, Claus; Bauditz, Peter
PA Novo Nordisk A/S, Den.; Hansen, Peter Kamp; Von der Osten, Claus; Bauditz, Peter
SO PCT Int. Appl., 81 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9820115	A1	19980514	WO 1997-DK493	19971031
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9747726	A1	19980529	AU 1997-47726	19971031
	EP 948610	A1	19991013	EP 1997-910270	19971031
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
	CN 1235638	A	19991117	CN 1997-199434	19971031
	BR 9712473	A	19991221	BR 1997-12473	19971031
	JP 2002510191	T2	20020402	JP 1998-520957	19971031
	KR 2000053060	A	20000825	KR 1999-703970	19990504
PRAI	DK 1996-1236	A	19961104		
	DK 1997-784	A	19970702		
	US 1997-52482P	P	19970714		
	DK 1997-1198	A	19971020		
	WO 1997-DK493	W	19971031		

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 15 OF 24 MEDLINE DUPLICATE 1
AN 1998353360 MEDLINE
DN 98353360 PubMed ID: 9687432
TI Expression and secretion of defined **cutinase variants** by *Aspergillus awamori*.
AU van Gemeren I A; Beijersbergen A; van den Hondel C A; Verrips C T
CS Department of Biotechnology, Unilever Research, 3133 AT Vlaardingen, The Netherlands.. ingeborg-van.gemeren@unilever.com
SO APPLIED AND ENVIRONMENTAL MICROBIOLOGY, (1998 Aug) 64 (8) 2794-9.
Journal code: 7605801. ISSN: 0099-2240.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English

FS Priority Journals
EM 199809
ED Entered STN: 19981006
Last Updated on STN: 19981006
Entered Medline: 19980924

L7 ANSWER 16 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
AN 1999-02398 BIOTECHDS
TI Expression and secretion of defined **cutinase variants**
by *Aspergillus awamori*;
enzyme engineering for increased protein secretion
AU van Gemeren I A; Beijersbergen A; van den Hondel C A M J J
CS Unilever; TNO-Nutr.Food-Res.Inst.; Univ.Utrecht
LO Department of Biotechnology, Unilever Research, Olivier van Noortlaan
120, 3133 AT Vlaardingen, The Netherlands.
Email: ingeborg-van-gemeren@unilever.com
SO Appl.Environ.Microbiol.; (1998) 64, 8, 2794-99
CODEN: AEMIDF ISSN: 0099-2240
DT Journal
LA English

L7 ANSWER 17 OF 24 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1997:264650 BIOSIS
DN PREV199799571253
TI Cloning of cutinase transcription factor 1, a transactivating protein
containing Cys-6Zn-2 binuclear cluster DNA-binding motif.
AU Li, Daoxin; Kolattukudy, Pappachan E. (1)
CS (1) Neurobiotechnol. Cent., Ohio State Univ., 206 Rightmire Hall, 1060
Carmack Rd., Columbus, OH 43210 USA
SO Journal of Biological Chemistry, (1997) Vol. 272, No. 19, pp. 12462-12467.
ISSN: 0021-9258.
DT Article
LA English

L7 ANSWER 18 OF 24 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE
2
AN 1997:78363 BIOSIS
DN PREV199799385066
TI Dynamics of *Fusarium solani* **cutinase** investigated through
structural comparison among different crystal forms of its
variants.
AU Longhi, Sonia; Nicolas, Anne; Creveld, Lucia; Egmond, Maarten; Verrips, C.
Theo; De Vlieg, Jakob; Martinez, Chrislaine; Cambillau, Christian (1)
CS (1) Lab. Cristallographie et Cristallisation Macromolecules Biol.,
UPR9039, CNRS, IFR1, 31 Chemin Joseph Aiguier, 13402 Marseille Cedex 20
France
SO Proteins Structure Function and Genetics, (1996) Vol. 26, No. 4, pp.
442-458.
ISSN: 0887-3585.
DT Article
LA English

L7 ANSWER 19 OF 24 HCAPLUS COPYRIGHT 2003 ACS
AN 1995:990655 HCAPLUS
DN 124:24865
TI A method of preparing a variant of a lipolytic enzyme
IN Svendsen, Allan; Clausen, Ib Groth; Okkels, Jens Sigurd; Thellersen,
Marianne
PA Novo Nordisk A/S, Den.
SO PCT Int. Appl., 85 pp.
CODEN: PIXXD2

DT Patent
LA English

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9522615	A1	19950824	WO 1995-DK79	19950222
	W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG,				

MN, MW, MX, NL, NO, PL, PT, RO, RU, SD, SE, SI, TJ, TT,
 UA, UG
 RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT,
 LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE,
 SN, TD, TG

CA 2183431	AA	19950824	CA 1995-2183431	19950222
AU 9518067	A1	19950904	AU 1995-18067	19950222
EP 746618	A1	19961211	EP 1995-909666	19950222
EP 746618	B1	20020821		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE

CN 1147836	A	19970416	CN 1995-192164	19950222
CN 1077598	B	20020109		
JP 09509058	T2	19970916	JP 1995-521525	19950222
BR 9506861	A	19970923	BR 1995-6861	19950222
AT 222604	E	20020915	AT 1995-909666	19950222
FI 9603266	A	19960821	FI 1996-3266	19960821
US 5976855	A	19991102	US 1996-701339	19960822
PRAI DK 1994-217	A	19940222		
WO 1995-DK79	W	19950222		

L7 ANSWER 20 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
 AN 1995-09267 BIOTECHDS
 TI Cutinase from *Fusarium solani* pisi hydrolyzing triglyceride analogues.
 Effect of acyl chain length and position in the substrate molecule on
 activity and enantioselectivity;
 enzyme characterization and site-directed mutagenesis
 AU Mannesse M L M; Cox R C; Koops B C; *Verheij H M; de Haas G H; Egmond M
 R; van der Hijden H T W M; de Vlieg J
 CS Univ.Utrecht; Unilever
 LO University of Utrecht, P.O. Box 80.083, 3508 TB Utrecht, The Netherlands.
 Email: m.mannesse@chem.ruu.nl.
 SO Biochemistry; (1995) 34, 19, 6400-407
 CODEN: BICHAW ISSN: 0006-2960
 DT Journal
 LA English

L7 ANSWER 21 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
 AN 1996-01811 BIOTECHDS
 TI Secretion of wild-type and mutant cutinases by *Saccharomyces cerevisiae*;
Fusarium solani pisi enzyme engineering for improved activity and
 protein secretion (conference abstract)
 AU Sagt C M J; Verrips C T
 CS Univ.Utrecht; Unilever
 LO Utrecht University, 3584 CH Utrecht, The Netherlands.
 SO Yeast; (1995) 11, Spec.Iss., S594
 CODEN: YESTE3 ISSN: 0749-503X
 17th International Conference on Yeast Genetics and Molecular Biology,
 Lisbon, Portugal, 10-16 June, 1995.
 DT Journal
 LA English

L7 ANSWER 22 OF 24 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT AND ISI
 AN 1994-11303 BIOTECHDS
 TI Eukaryotic **cutinase variant** with increased lipolytic
 activity;
 enzyme engineering and expression of plasmid pUR7220 in *Saccharomyces*,
Aspergillus, *Hansenula* or *Kluyveromyces* sp. for increased
 hydrophobicity for use in surfactant composition
 PA Unilever
 PI WO 9414963 7 Jul 1994
 AI WO 1993-EP3550 9 Dec 1993
 PRAI NL 1992-204025 18 Dec 1992
 DT Patent
 LA English
 OS WPI: 1994-234698 [28]

L7 ANSWER 23 OF 24 HCAPLUS COPYRIGHT 2003 ACS
 AN 1994:626158 HCAPLUS
 DN 121:226158

TI Variation in cutinase, esterase, and chromosome patterns in mutants of
a transformed pathogenic strain of Phytophthora capsici
AU Mena, G. L.; Munoz, C. I.; Guzman, P. A.; Bailey, A. M.
CS Departamento de Ingenieria Genetica de Plantas, CINVESTAV, Irapuato, 36500,
Mex.
SO Phytopathology (1994), 84(5), 502-8
CODEN: PHYTAJ; ISSN: 0031-949X
DT Journal
LA English

L7 ANSWER 24 OF 24 MEDLINE DUPLICATE 4
AN 87056987 MEDLINE
DN 87056987 PubMed ID: 3782031
TI Isolation of a Fusarium solani mutant reduced in cutinase activity and
virulence.
AU Dantzig A H; Zuckerman S H; Andonov-Roland M M
SO JOURNAL OF BACTERIOLOGY, (1986 Nov) 168 (2) 911-6.
Journal code: 2985120R. ISSN: 0021-9193.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198612
ED Entered STN: 19900302
Last Updated on STN: 19970203
Entered Medline: 19861224

=> dis his

(FILE 'HOME' ENTERED AT 19:58:59 ON 04 MAR 2003)

FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS,
NTIS, ESBIODBASE, BIOTECHNO, WPIDS' ENTERED AT 19:59:06 ON 04 MAR 2003

L1 131 S CUTINASE (10A) (VARIANT OR MUTAT?)
L2 48 S L1 AND (THERMO? OR TEMPERAT?)
L3 57 S L1 AND FUNG?
L4 22 S L2 AND L3
L5 14 DUP REM L4 (8 DUPLICATES REMOVED)
L6 35 S L3 NOT L4
L7 24 DUP REM L6 (11 DUPLICATES REMOVED)

FILE 'STNGUIDE' ENTERED AT 20:09:29 ON 04 MAR 2003

FILE 'MEDLINE, BIOTECHDS, BIOSIS, HCAPLUS' ENTERED AT 20:10:32 ON 04 MAR
2003

FILE 'STNGUIDE' ENTERED AT 20:10:36 ON 04 MAR 2003

=> log h

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.12	84.51
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	0.00	-0.65

SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 20:11:44 ON 04 MAR 2003

WEST Search History

DATE: Tuesday, March 04, 2003

<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
side by side			result set
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ</i>			
L2	L1 and fung\$	26	L2
L1	cutinase near10 (mutat? or variant)	32	L1

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 10 of 32 returned.☐ 1. Document ID: US 20030008361 A1

L1: Entry 1 of 32

File: PGPB

Jan 9, 2003

PGPUB-DOCUMENT-NUMBER: 20030008361

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030008361 A1

TITLE: Process for the preparation of substituted 3-phenyl-propanoic acid esters and substituted 3-phenyl-propanoic acids

PUBLICATION-DATE: January 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ebdrup, Soren	Kobenhavn O		DK	
Deussen, Heinz-Josef W.	Soborg		DK	
Zundel, Magali	Soborg		DK	
Bury, Paul Stanley	Kobenhavn NV		DK	

US-CL-CURRENT: 435/135; 435/136

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☐ 2. Document ID: US 20020137661 A1

L1: Entry 2 of 32

File: PGPB

Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137661

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020137661 A1

TITLE: METHOD FOR CREATING POLYNUCLEOTIDE AND POLYPEPTIDE SEQUENCES

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
ARNOLD, FRANCES	PASADENA	CA	US	
SHAO, ZHIXIN	PENZBERG	DE	US	
VOLKO, ALEXANDER	SOUTH PASADENA	CA	US	

US-CL-CURRENT: 514/1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☐ 3. Document ID: US 20020123123 A1

L1: Entry 3 of 32

File: PGPB

Sep 5, 2002

PGPUB-DOCUMENT-NUMBER: 20020123123
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020123123 A1

TITLE: Cutinase variants

PUBLICATION-DATE: September 5, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Svendsen, Allan	Horsholm		DK	
Glad, Sanne O. Schroder	Ballerup		DK	
Fukuyama, Shiro	Chiba		JP	
Matsui, Tomoko	Chiba		JP	

US-CL-CURRENT: 435/200; 435/252.3, 435/254.2, 435/320.1, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 4. Document ID: US 20020068352 A1

L1: Entry 4 of 32

File: PGPB

Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068352
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020068352 A1

TITLE: Alpha-amylase variants with altered 1, 6-activity

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Svendsen, Allan	Horsholm		DK	
Jorgensen, Christel Thea	Kobenhavn O		DK	
Nielsen, Bjarne Ronfeldt	Virum		DK	

US-CL-CURRENT: 435/202; 435/183, 435/195, 435/69.1, 510/392, 510/393

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments		KWIC	Draw Desc	Image
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☐ 5. Document ID: US 20020066144 A1

L1: Entry 5 of 32

File: PGPB

Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020066144
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020066144 A1

TITLE: Redeposition or backstain inhibition during stonewashing process

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Uyama, Naoto	Chiba-prefecture		JP	
Daimon, Kosaku	Chiba-ken		JP	

US-CL-CURRENT: 8/115.51

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw. Desc.	Image
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☐ 6. Document ID: US 20010039253 A1

L1: Entry 6 of 32

File: PGPB

Nov 8, 2001

PGPUB-DOCUMENT-NUMBER: 20010039253
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010039253 A1

TITLE: Alpha-amylase mutants

PUBLICATION-DATE: November 8, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Borchert, Torben Vedel	Copenhagen O		DK	
Svendsen, Allan	Birkerod		DK	
Andersen, Carsten	Vaerloese		DK	
Nielsen, Bjarne	Virum		DK	
Nissen, Torben Lauesgaard	Frederiksberg C		DK	
Kjarulff, Soren	Vanlose		DK	

US-CL-CURRENT: 510/392; 510/305, 510/306

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw. Desc.	Image
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☐ 7. Document ID: US 6495357 B1

L1: Entry 7 of 32

File: USPT

Dec 17, 2002

US-PAT-NO: 6495357
DOCUMENT-IDENTIFIER: US 6495357 B1

TITLE: Lipolytic enzymes

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw. Desc.	Image
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☐ 8. Document ID: US 6436888 B1

L1: Entry 8 of 32

File: USPT

Aug 20, 2002

US-PAT-NO: 6436888
DOCUMENT-IDENTIFIER: US 6436888 B1

TITLE: .alpha.-amylase mutants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWMC	Draw Desc	Image
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☐ 9. Document ID: US 6436643 B1

L1: Entry 9 of 32

File: USPT

Aug 20, 2002

US-PAT-NO: 6436643

DOCUMENT-IDENTIFIER: US 6436643 B1

TITLE: Process for site-directed integration of multiple copies of a gene in a mould

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWMC	Draw Desc	Image
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☐ 10. Document ID: US 6361989 B1

L1: Entry 10 of 32

File: USPT

Mar 26, 2002

US-PAT-NO: 6361989

DOCUMENT-IDENTIFIER: US 6361989 B1

TITLE: .alpha.-amylase and .alpha.-amylase variants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWMC	Draw Desc	Image
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Terms	Documents
cutinase near10 (mutat? or variant)	32

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[Change Format](#)[Previous Page](#)[Next Page](#)



US006495357B1

(12) **United States Patent**
Fuglsang et al.

(10) **Patent No.:** **US 6,495,357 B1**
(45) Date of Patent: **Dec. 17, 2002**

(54) **LIPOLYTIC ENZYMES**

(75) **Inventors:** **Claus Crone Fuglsang, Nivaa; Jens Sigurd Okkels, Frederiksberg; Dorte Aaby Petersen, Birkerød; Shamkant Anant Patkar, Lyngby; Marianne Thellersen, Frederiksberg; Allan Svendsen, Birkerød; Kim Borch, Copenhagen, all of (DK); John C. Royer, Davis, CA (US); Titus Kretzschmar, Værløse (DK); Torben Halkier, Birkerød (DK); Jesper Vind, Lyngby (DK); Steen Troels Jørgensen, Allerød (DK)**

(73) **Assignee:** **Novozyme A/S, Bagsvaerd (DK)**

(*) **Notice:** **Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.**

(21) **Appl. No.:** **09/007,288**

(22) **Filed:** **Jan. 14, 1998**

Related U.S. Application Data

- (63) Continuation-in-part of application No. PCT/DK96/00322, filed on Jul. 12, 1996, and a continuation-in-part of application No. PCT/DK96/00341, filed on Aug. 12, 1996.
 (60) Provisional application No. 60/011,627, filed on Feb. 14, 1996, provisional application No. 60/011,634, filed on Feb. 14, 1996, provisional application No. 60/016,754, filed on May 7, 1996, and provisional application No. 60/020,461, filed on May 7, 1996.

(30) Foreign Application Priority Data

Jul. 14, 1995	(DK)	0832/95
Aug. 11, 1995	(DK)	0905/95
Sep. 13, 1995	(DK)	1013/95
Sep. 29, 1995	(DK)	1096/95
Nov. 21, 1995	(DK)	1306/95
Apr. 1, 1996	(DK)	0372/96
Apr. 1, 1996	(DK)	0374/96

(51) **Int. Cl.⁷** **C12N 9/20**

(52) **U.S. Cl.** **435/198; 435/195; 435/196; 435/197**

(58) **Field of Search** **435/183, 198, 435/195, 196, 197**

(56) References Cited

U.S. PATENT DOCUMENTS

5,892,013 A * 4/1999 Svendsen et al. 536/23.2

FOREIGN PATENT DOCUMENTS

EP	0 214 761	3/1987
WO	WO 92/05249	4/1992
WO	WO 93/01285	1/1993
WO	WO 94/03578	2/1994
WO	WO 94/14964	7/1994
WO	WO 94/25578	* 11/1994

OTHER PUBLICATIONS

Lunn, C. et al., *M.in Enzym.*, vol. 125, pp. 138-149, 1986.*
 Japanese Application including translation of Asahi Kasei Kogyo KK, JP 6113845.

* cited by examiner

Primary Examiner—Nashaat T. Nashed

(74) *Attorney, Agent, or Firm*—Elias J. Lambiris; Jason I. Garbell

(57) ABSTRACT

The present invention relates to a modified enzyme with lipolytic activity, a lipolytic enzyme capable of removing a substantial amount of fatty matter a one cycle wash, a DNA sequence encoding said enzymes, a vector comprising said DNA sequence, a host cell harbouring said DNA sequence or said vector, and a process for producing said enzymes with lipolytic activity.

63 Claims, 22 Drawing Sheets

WEST

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L1: Entry 11 of 32

File: USPT

May 29, 2001

US-PAT-NO: 6239093

DOCUMENT-IDENTIFIER: US 6239093 B1

TITLE: Liquid cleaning compositions and shampoos containing dianionic or alkoxylated dianionic surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 12. Document ID: US 6204232 B1

L1: Entry 12 of 32

File: USPT

Mar 20, 2001

US-PAT-NO: 6204232

DOCUMENT-IDENTIFIER: US 6204232 B1

TITLE: .alpha.-amylase mutants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 13. Document ID: US 6197565 B1

L1: Entry 13 of 32

File: USPT

Mar 6, 2001

US-PAT-NO: 6197565

DOCUMENT-IDENTIFIER: US 6197565 B1

TITLE: .alpha.-Amylase variants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 14. Document ID: US 6187576 B1

L1: Entry 14 of 32

File: USPT

Feb 13, 2001

US-PAT-NO: 6187576

DOCUMENT-IDENTIFIER: US 6187576 B1

TITLE: .alpha.-amylase mutants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 15. Document ID: US 6143708 A

L1: Entry 15 of 32

File: USPT

Nov 7, 2000

US-PAT-NO: 6143708

DOCUMENT-IDENTIFIER: US 6143708 A

TITLE: .alpha.-amylase mutants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 16. Document ID: US 6133220 A

L1: Entry 16 of 32

File: USPT

Oct 17, 2000

US-PAT-NO: 6133220

DOCUMENT-IDENTIFIER: US 6133220 A

TITLE: Detergent compositions containing a lipase variant at low levels

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 17. Document ID: US 6087321 A

L1: Entry 17 of 32

File: USPT

Jul 11, 2000

US-PAT-NO: 6087321

DOCUMENT-IDENTIFIER: US 6087321 A

TITLE: Detergent compositions containing amines, alkyl sulfates, and other anionic surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 18. Document ID: US 6087309 A

L1: Entry 18 of 32

File: USPT

Jul 11, 2000

US-PAT-NO: 6087309

DOCUMENT-IDENTIFIER: US 6087309 A

TITLE: Liquid cleaning compositions containing selected mid-chain branched surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 19. Document ID: US 6046152 A

L1: Entry 19 of 32

File: USPT

Apr 4, 2000

US-PAT-NO: 6046152

DOCUMENT-IDENTIFIER: US 6046152 A

TITLE: Liquid cleaning compositions containing selected mid-chain branched

surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 20. Document ID: US 6017874 A

L1: Entry 20 of 32

File: USPT

Jan 25, 2000

US-PAT-NO: 6017874

DOCUMENT-IDENTIFIER: US 6017874 A

TITLE: Liquid laundry detergents containing selected quaternary ammonium compounds

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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Terms	Documents
cutinase near10 (mutat? or variant)	32

Display Format:

-

[Change Format](#)[Previous Page](#)[Next Page](#)

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L1: Entry 21 of 32

File: USPT

Aug 10, 1999

US-PAT-NO: 5935271

DOCUMENT-IDENTIFIER: US 5935271 A

TITLE: Laundry detergent compositions containing lipolytic enzyme and amines

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KIMC	Draw. Desc	Image
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☐ 22. Document ID: US 5929022 A

L1: Entry 22 of 32

File: USPT

Jul 27, 1999

US-PAT-NO: 5929022

DOCUMENT-IDENTIFIER: US 5929022 A

TITLE: Detergent compositions containing amine and specially selected perfumes

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KIMC	Draw. Desc	Image
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☐ 23. Document ID: US 5916862 A

L1: Entry 23 of 32

File: USPT

Jun 29, 1999

US-PAT-NO: 5916862

DOCUMENT-IDENTIFIER: US 5916862 A

TITLE: Detergent compositions containing amines and anionic surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KIMC	Draw. Desc	Image
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☐ 24. Document ID: US 5837010 A

L1: Entry 24 of 32

File: USPT

Nov 17, 1998

US-PAT-NO: 5837010

DOCUMENT-IDENTIFIER: US 5837010 A

TITLE: Detergent compositions containing a lipase variant at low levels

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KIMC	Draw. Desc	Image
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☐ 25. Document ID: WO 9414964 A1

L1: Entry 25 of 32

File: EPAB

Jul 7, 1994

PUB-NO: WO009414964A1

DOCUMENT-IDENTIFIER: WO 9414964 A1

TITLE: MODIFIED CUTINASES, DNA, VECTOR AND HOST

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 26. Document ID: WO 9414963 A1

L1: Entry 26 of 32

File: EPAB

Jul 7, 1994

PUB-NO: WO009414963A1

DOCUMENT-IDENTIFIER: WO 9414963 A1

TITLE: MODIFIED CUTINASES, DNA, VECTOR AND HOST

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 27. Document ID: WO 200192502 A1 AU 200160085 A

L1: Entry 27 of 32

File: DWPI

Dec 6, 2001

DERWENT-ACC-NO: 2002-216714

DERWENT-WEEK: 200228

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TITLE: Variant of parent fungal cutinase for enzymatic hydrolysis of cyclic oligomers of poly(ethylene terephthalate), comprises a substitution of amino acid residues corresponding to positions of Humicola insolens cutinase

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 28. Document ID: WO 200034450 A1 CN 1329664 A AU 200015038 A BR 9915832 A EP 1137761 A1 KR 2001081059 A

L1: Entry 28 of 32

File: DWPI

Jun 15, 2000

DERWENT-ACC-NO: 2000-482424

DERWENT-WEEK: 200227

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TITLE: Thermostable variant of parent fungal cutinase useful for dyeing polyester yarn or fabric, comprises substitution of amino acid residues at predetermined positions from the N-terminal amino acid

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 29. Document ID: WO 9743376 A1 MX 9809589 A1 AU 9658617 A BR 9612611 A CN 1224454 A JP 11511778 W

L1: Entry 29 of 32

File: DWPI

Nov 20, 1997

DERWENT-ACC-NO: 1998-008848
DERWENT-WEEK: 200051
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TITLE: Detergent composition for cleaning hard surfaces and laundry, etc. - comprises specific lipolytic enzyme and second lipolytic enzyme giving improved whiteness maintenance to fabrics

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 30. Document ID: WO 9414964 A1 BR 9307722 A AU 9457000 A ZA 9309416 A SK 9500802 A3 CZ 9501639 A3 JP 08504589 W CN 1090329 A HU 71315 T EP 802981 A1

L1: Entry 30 of 32

File: DWPI

Jul 7, 1994

DERWENT-ACC-NO: 1994-234699
DERWENT-WEEK: 200002
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TITLE: Eukaryotic cutinase variants with improved lipolytic activity - with modified amino acid structure to improve compatibility with anionic surfactants

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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Generate Collection

Print

Terms	Documents
cutinase near10 (mutat? or variant)	32

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-

Change Format

[Previous Page](#)

[Next Page](#)

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☐ 31. Document ID: WO 9414963 A1 BR 9307678 A AU 9456999 A ZA 9309415 A EP 679188 A1 SK 9500795 A3 CZ 9501578 A3 JP 08504588 W CN 1090328 A HU 71325 T

L1: Entry 31 of 32

File: DWPI

Jul 7, 1994

DERWENT-ACC-NO: 1994-234698

DERWENT-WEEK: 200002

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TITLE: Eukaryotic cutinase variants with improved lipolytic activity - useful in detergent compsns., with modified amino acid compsn. to increase hydrophobicity

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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☐ 32. Document ID: WO 9407989 A1 ES 2102677 T3 AU 9348184 A EP 662121 A1 JP 08502087 W EP 662121 B1 DE 69310526 E

L1: Entry 32 of 32

File: DWPI

Apr 14, 1994

DERWENT-ACC-NO: 1994-135560

DERWENT-WEEK: 199737

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TITLE: Ultrasonic cleaning process for fabric, dishes etc - comprising dipping object in aq. cleaning medium contg lipolytic enzyme, and treating with ultrasound

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KM/C	Draw Desc	Image
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cutinase near10 (mutat? or variant)	32

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[Change Format](#)[Previous Page](#)[Next Page](#)